

**ADMIN RECORD**

**1996 ANNUAL UPDATE  
ENVIRONMENTAL RESTORATION RANKING**

**Rocky Mountain Remediation Services, L.L.C.**

**DOCUMENT CLASSIFICATION  
REVIEW WAIVER PER  
CLASSIFICATION OFFICE**

**September 1996**

10/11/96

## 1996 ANNUAL UPDATE ENVIRONMENTAL RESTORATION RANKING

The Rocky Flats Cleanup Agreement (RFCA, EPA 1996a), Attachment 4, contains the 1995 prioritized list of Environmental Restoration (ER) sites developed to select the top priority sites for remediation (DOE, 1995a). The list was developed to be used as an aid in planning and prioritizing remedial actions at Rocky Flats Environmental Technology Site (RFETS). The sequence of remediation activities at RFETS has generally followed the prioritization. Other factors that also influence the remediation sequence are funding, project cost, resource availability, data sufficiency, and integration with other remedial and site activities. Prioritization accelerates the cleanup process of the worst sites first, and more quickly reduces risks to human health and the environment. The prioritization of cleanup targets also results in cost reductions by allowing better planning, and more efficient utilization of resources.

The 1995 prioritization methodology was developed by a working group of the United States Environmental Protection Agency (EPA), the Colorado Department of Public Health and the Environment (CDPHE), the Department of Energy (DOE), Kaiser-Hill, and Rocky Mountain Remediation Services (RMRS) staff and was implemented by RMRS. The result was a prioritized list of ER sites, including a list of ranked sites that require more information (DOE, 1995a). In accordance with RFCA Attachment 4, the ranking has been updated for 1996. The evaluation process is essentially the same as was used in the September 1995 ranking, with the following exceptions:

- Action Level Framework (ALF) (RFCA, Attachment 5) values were used instead of Programmatic Risk-Based Preliminary Remediation Goals (PPRGs),
- The scoring scale was adjusted to reflect the greater range in ALF ratios,
- Impact to surface water was evaluated instead of mobility,
- A professional judgment factor was added to account for process knowledge,
- Groundwater plumes were evaluated and ranked separately from the contaminant source,
- Metals data for subsurface soils were not used, as ALF values were not available in time to be included in the evaluation, and
- The secondary evaluation, which included project cost and schedule estimates has been omitted due to other planning activities ongoing at the RFETS.

### General Methodology

The ranking process detailed in RFCA Attachment 4 has been slightly modified for 1996 to incorporate the ALF and process knowledge. This ranking was generated by using concentrations of contaminants present at different sites, action levels for the appropriate media and location, and factors for impact to surface water, potential for further release, and

professional judgment to develop a score for each site. The scores were then ranked to determine which sites have the highest priority. This methodology is conservative and is used only to generate a list to prioritize remedial actions, and pre-remediation investigations. It is not meant to replace a formal risk assessment.

The following steps were used in the 1996 ranking process:

- The existing analytical data were compared to background data,
- Data exceeding background were compared to the ALF Tier I and Tier II values,
- Ratios of Tier II ALF values to contaminant concentrations/activities were used for the ranking, unless Tier II values were not available,
- A column was added to the ranking sheet to note Tier I exceedances,
- The resulting ratios were converted to a score of 1 to 10,
- The impact to surface water was evaluated, and assigned a factor of 1 to 3
- The potential for further release was evaluated, and a factor of 1 to 3 applied,
- Process knowledge of the site was evaluated, and a professional judgment factor of 0.5 to 2 applied, and,
- The results of the previous steps were multiplied to generate a score per site. This score was used to rank the ER sites.

Analytical data in RFEDS from 1990 to the present were evaluated for three media, surface soils, subsurface soils, and groundwater. The analytical data were extracted from RFEDS and compiled into data sets by media and analytical suite. The media-specific analytical data were compared to the media- and chemical-specific background UTL<sub>99/99</sub>. All data above the background UTL<sub>99/99</sub> were then compared to the appropriate Tier I and Tier II ALF values in RFCA. The draft radiological ALFs (DOE, 1996b) for surface soils were applied to both surface and subsurface soils. The ALF values for metals in subsurface soils were not agreed upon in time to be included in the 1996 ranking and metals data from subsurface soils were not used in the ranking. A review of the data suggests that this will not effect the ranking significantly.

All exceedances of the Tier I and II ALF values were tabulated for groundwater, subsurface soils, and surface soils at each sample location. The locations were plotted on maps using available survey information. Where no survey data is available, approximate locations were derived from work plan maps. The sample locations were assigned to areas-of-concern, IHSSs, and groundwater plumes based on the media, location of the exceedance, and the analyte.

#### Media Specific Evaluations

**Groundwater** - Sitewide groundwater data were compared to background UTL<sub>99/99</sub> values presented in the 1993 Background Geochemical Characterization Report (DOE 1993)

Groundwater data were then compared to the Tier I and Tier II ALF values. All well locations

where a chemical concentration exceeds a Tier I or Tier II ALF value were plotted. The locations were then associated with the most probable source area and known groundwater plumes. Ratios of analyte concentrations to the Tier II ALF values were used in the scoring.

**Subsurface Soil** - All available subsurface soil data collected since 1990 were compared to subsurface soil background UTL<sub>99,999</sub> values (DOE 1993). The data for volatile organic compounds were compared to the Tier I ALF values (there are no Tier II values), the radiological activities were compared to the surface soil Tier I and Tier II ALF values. The ALF values for metals in subsurface soils were not agreed upon in time to be included in the 1996 ranking. The locations of all borings, where a chemical concentration exceeded an ALF value, were plotted and associated with the most likely source area.

**Surface Soil** - All available surface soil data for metals and radiologicals were compared to UTL<sub>99,999</sub> background values computed from data presented in the Background Soil Characterization Program (DOE 1995b). The inorganic and radiological results above background and all data for organic compounds were compared to the Tier I and Tier II ALF values for surface soil. Within the boundaries of the Industrial Area Operable Unit (OU), the surface soil data were compared to office worker ALFs. In the Buffer Zone OU, the surface soil data were compared to open-space ALFs. The ALF exceedances were plotted to determine the most likely source area, IHSS or group of IHSSs, using the most common wind patterns. Ratios of analyte concentrations to the Tier II ALF values were used in the scoring.

#### Chemical Score Tabulation

All ALF exceedances were tabulated by IHSS, group of IHSSs, or source area. The chemical score was calculated for each media, within each site, by adding the maximum ratio for each analyte per media. The groundwater, subsurface soil, and surface soil scores were then summed to generate a total score per site. This is a conservative approach that allows the sites to be judged on a uniform basis.

A separate score was derived for each groundwater plume by evaluating only the groundwater exceedances. A risk score was calculated for each plume, as above, by adding the maximum ALF ratios for groundwater contaminants associated with all sites within the estimated plume area. This method results in groundwater being used twice, once in the scoring of sources, and again for the scoring of groundwater plumes.

The total chemical scores were graded using the following table so that the risk component of the ranking system would be weighted similarly to the other components. The table has been adjusted from the 1995 methodology due to the increase in the range of the scores.

| Total Chemical Score | ALF/PPRG Score |
|----------------------|----------------|
| >20001               | 10             |
| 10001-20000          | 9              |
| 5001-10000           | 8              |
| 1001-5000            | 7              |
| 501-1000             | 6              |
| 251-500              | 5              |
| 126-250              | 4              |
| 75-125               | 3              |
| 26-75                | 2              |
| 1-25                 | 1              |

### Surface Water Impacts

The impact of contamination at a site on surface water quality was evaluated and each site was assigned a factor of 1 to 3 to indicate the impact on surface water from each site. The impact to surface water factors were assigned on a scale of 1 to 3 as follows:

- 1 Contaminants that are immobile in the environment or for which there is no pathway to surface water. Radionuclides and metals were given a score of one unless adjacent to surface water, or on a steep slope bordering surface water. A factor of one was used where engineered structures are in place that prevent the spread of contaminants.
- 2 This rating was applied where contaminants have or are expected to have an impact on surface water at the Tier II ALF level (MCL).
- 3 This rating will apply where there is a documented or probable impact to surface water above the Tier I ALFs (100 x MCL).

### Potential for Further Release

This factor takes into account the potential for additional release of contaminants into the environment and includes cross-media movement of contaminants within the environment. Sites were assigned a value of 1 to 3 based on the following criteria:

- 1 Sites where contaminants are not present as free product, nor in very high concentrations, and/or show no cross-contamination of environmental media. A factor of one was used where engineered structures are in place that effectively prevent the release or migration of contaminants.

- 2 Sites where high concentrations in soil may be present and/or where there is a potential for cross media movement of contamination
- 3 Sites where there is suspected or known free product, significant levels of contamination exists, and/or where cross contamination of environmental media is present or likely

#### Professional Judgment

A professional judgment factor was added to this year's ranking based on process knowledge not represented by the other factors. The reasons for assigning the professional judgment factor are given in the comment column of the ranking. The values for this factor are

- 0.5 The ranking overestimates the priority of a site. This was used if a risk assessment or conservative screen has been completed indicating an acceptable risk, but the site ranks high on the priority listing.
- 1 The ranking reflects process knowledge of a site.
- 2 The ranking underestimates the priority of a site. This may be due to a lack of data, coupled with process knowledge of significant releases.

#### Total Score and Ranking

The total score was calculated by multiplying the ALF score times the impact to surface water, potential for further release, and professional judgment factors. A formal risk assessment is a more precise evaluation of the same data, and, where risk assessment data exist, it was used to refine the ranking of the sites through the use of the professional judgment factor.

Where insufficient data currently exist to rank sites, these sites were assigned to the category of needs further investigation (INV) and ranked using the professional judgment factor. This placed them on the ranking above known low-risk sites. As data become available, the ranking for these sites will be updated.

The Solar Ponds groundwater score was calculated without using data from an upgradient well which shows the effects of an upgradient plume. This well was used in the calculations for the groundwater score for IHSS 118.1 and the carbon tetrachloride spill plume.

Where analytical data and process knowledge indicate that there are localized areas of contamination, the associated data was eliminated from site evaluation, and was assigned to a hot spot list. These sites will be evaluated to verify that these are hot spots. Most of the localized extent sites are PCB sites, including a PCB site in IHSS 150.6 and those surrounding Bowman's

Pond The Old Landfill has analytical data indicating the presence of small radiological anomalies at the surface Best management practices will be used on these hot spots as part of the final remedy for the Old Landfill

Radium 226 and 228 data were not evaluated for the following reasons

- Radium 226 and 228 are not listed as having been used at RFETS in either the Historical Release Report (DOE, 1992) or the Rocky Flats Toxicologic Review and Dose Reconstruction, Task 3/4 Report (ChemRisk, 1992)
- The decay chains and half-lives of decay products make it highly unlikely that significant amounts of radium 226 or 228 would have accumulated by radioactive decay of radionuclides known to have been used at RFETS
- The soils and groundwater in the foothills to the west of RFETS are known to have high levels of both uranium (total) and radium 226
- The background amount for radium 226 in surface soil has a PPRG ratio of 48 Therefore, any surface soil analytical result above background would skew the prioritization score to a higher result This is not justified given the information on usage and natural occurrence

### Results

The use of the groundwater ALF values in the 1996 ranking and the inclusion of the groundwater plumes increased the influence of groundwater on the final priority listing This lowered the tank sites on the priority list, although they remain among the top ranked sites Some sites also moved on the basis of newly available data Overall, highest priority sites were reshuffled but remained near the top of the listing

Remediation of sources of contamination in 7 of the 15 top ranked IHSSs has been completed or interim action and stabilization has been completed during FY96 (Table 1) The top three ranked IHSSs, 109 (Ryan's Pit), IHSS 110 (Trench T-3), 111 (Trench T-4) have been completed The 4 other sites in the top 15 that have been stabilized and interim actions completed are tank T-40, tanks T-2/T-3, tank T-14, and Tank T-16N in IHSS 121 These tanks were cleaned and foamed, but remain in the ground

Trench T-1 (IHSS 108) was scored using data reported in the Historical Release Report (DOE 1992) from a drum that was uncovered and sampled in a 1982 event This decision was made based on process knowledge and the conclusion that direct sampling of the trench will be very hazardous With the inclusion of this data, IHSS 108 ranks number 5 on the listing

One groundwater plume ranked in the top 10 The Mound Plume, which is located just east of the PA and is migrating toward South Walnut Creek The 903 Pad & Ryan's Pit Plume, which is migrating southeastward from the 903 Pad and Ryan's Pit toward Woman Creek ranked number 12 There are 6 plumes ranked in the top 20 of the priority listing

## References

- Environmental Protection Agency, State of Colorado, and Department of Energy  
Final Rocky Flats Cleanup Agreement CERCLA VIII-96-21, RCRA(3008(h)) VIII-96-01, State of Colorado Docket # 96-07-19-01 July 19, 1996
- Department of Energy, Environmental Protection Agency, Colorado Department of Public Health and the Environment 1996 Action Levels for Radionuclides in Soils for the Rocky Flats Cleanup Agreement, Preliminary Draft June 27, 1996
- Department of Energy 1992 Historical Release Report for the Rocky Flats Plant June, 1992
- Department of Energy 1993 Background Geochemical Characterization Report September 30, 1993
- Department of Energy 1995a Environmental Restoration Ranking September 27, 1995
- Department of Energy 1995b Geochemical Characterization of Background Surficial Soils Background Soils Characterization Program May 1995

ER Ranking

| Status | Rank | IHSS Number and Name                             | Total Tank Contents | Total Ground Water | Total Subsurface Soil | Total Surface Soil | Total Chemical Score | ALF Score | SW Impact Score | Potential for Further Release Multiplier | Professional Judgment Multiplier | Total Priority Score | Exceeds Tier 1 | General Comments   |
|--------|------|--|---------------------|--------------------|-----------------------|--------------------|----------------------|-----------|-----------------|--|----------------------------------|----------------------|----------------|--|
| C-96   | 1    | 108 Ryan's Pit                                   | 33679               | 2                  | <1                    | <1                 | 33681                | 10        | 2               | 3  | 1                                | 60                   | Yes            | Source removed   |
| C-96   | 2    | 110 Trench T 3                                   | 26101               | 1612               | <1                    | <1                 | 27713                | 10        | 2               | 3  | 1                                | 60                   | Yes            | Source removed   |
| C-96   | 3    | 111 Trench T-4                                   | 26101               | 78                 | n                     | n                  | 26179                | 10        | 2               | 3  | 1                                | 60                   | Yes            | Source removed   |
|        | 4    | 113 Mound  | 19064               | 6                  | 1                     | 1                  | 19071                | 9         | 3               | 2  | 1                                | 54                   | Yes            | Source of Mound Plume<br>Trench contents not sampled subsurface ALF ratio based on previously excavated drum data. |
|        | 5    | 108 Trench T 1                                   | 11                  | 11080              | <1                    | <1                 | 11207                | 9         | 1               | 3  | 2                                | 54                   | Yes            | IHSS evaluated together  |
|        | 6    | 112/155/183/140 903 Pad and Lip Area             | 40488               | <1                 | 45                    | 45                 | 40533                | 10        | 2               | 2  | 1                                | 40                   | Yes            | Impacting surface water in the S Walnut Creek Drainage   |
|        | 7    | Mound Plume                                      | 19067               | 19067              | 8                     | 8                  | 19067                | 9         | 3               | 1  | 1                                | 27                   | Yes            | IHSS evaluated together-Carbon Tetrachloride Plume Source  |
| IAC-96 | 8    | 118 T 132 and 121 Tanks 9 & 10                   | 5756                | 2321               | 2                     | 2                  | 9273                 | 8         | 1               | 3  | 1                                | 24                   | Yes            | Source removed, tank burned and stabilized   |
| IAC-96 | 9    | 121 Tank T-40                                    | n                   | n                  | <1                    | <1                 | 3570                 | 7         | 1               | 3  | 1                                | 21                   | Yes            | Source removed, tank burned and stabilized   |
| IAC-96 | 10   | 121/124 /124 2/125 PW Tank T 16N                 | <1                  | <1                 | n                     | n                  | 1453                 | 7         | 1               | 3  | 1                                | 21                   | Yes            | Tank burned and stabilized PAHs in surface soil and groundwater  |
| IAC-96 | 11   | 121 Tanks T 2/3 122-Underground Concrete Tanks   | 270                 | <1                 | 29                    | 29                 | 1050                 | 7         | 1               | 3  | 1                                | 20                   | Yes            | Low level impact on surface water in the S Walnut Creek drainage   |
|        | 12   | 903 Pad & Ryan's Pit Plume                       | 72427               | 72427              | 10                    | 10                 | 72427                | 10        | 2               | 1  | 1                                | 20                   | Yes            | Low level impact on surface water in the S Walnut Creek drainage   |
| IAC-96 | 13   | East Trenches Plume                              | 26105               | <1                 | <1                    | n                  | 1000                 | 6         | 1               | 3  | 1                                | 18                   | Yes            | Source removed, tank burned and stabilized   |
|        | 14   | 121/124 3 Process Waste Tank T 14                | 190                 | n                  | 12                    | 12                 | 202                  | 4         | 2               | 1  | 2                                | 16                   | NO             | Plume indicates source present   |
|        | 15   | 170 174 1 (174a) 174 2 (174b) PU&D Storage Areas | 190                 | n                  | 12                    | 12                 | 190                  | 4         | 2               | 1  | 1                                | 8                    | NO             | Source not characterized   |
|        | 16   | PU&D Yard Plume                                  | 9167                | 29                 | 159                   | 159                | 9355                 | 8         | 1               | 1  | 1                                | 8                    | Yes            | Uses current extraction well date only   |
|        | 17   | 119 1 OU 1 Solvent Spill Site                    | 9167                | n                  | n                     | n                  | 9167                 | 8         | 1               | 1  | 1                                | 8                    | Yes            | No impact on surface water in the S Walnut Creek drainage  |
|        | 18   | 881 Hillside/119 1 Plume                         | 5756                | n                  | n                     | n                  | 5756                 | 8         | 1               | 1  | 1                                | 8                    | Yes            | IHSS 118.1 is unattached source  |
|        | 19   | Carbon Tetrachloride Plume (118 1)               | <1                  | <1                 | 4110                  | 4110               | 4125                 | 7         | 1               | 2  | 0.5                              | 7                    | Yes            | New 1985 date-PAHs in surface soil   |
| IAC-96 | 20   | 121 Tank T 29 (Tank 207)                         | 2615                | n                  | n                     | n                  | 2643                 | 7         | 1               | 1  | 1                                | 7                    | Yes            | No impact on surface water   |
|        | 21   | Industrial Area Plume                            | 2403                | <1                 | 14                    | 14                 | 2417                 | 7         | 2               | 1  | 0.5                              | 7                    | Yes            | IHSS 10-4 to 10-6 or less up gradient groundwater from 118 1 not used in ranking IHSS 101                          |
|        | 22   | 101 Solar Ponds                                  | 2403                | <1                 | 14                    | 14                 | 2417                 | 7         | 2               | 1  | 0.5                              | 7                    | Yes            | Plume due to NO <sub>2</sub> impacts surface water in N Walnut Creek drainage                                      |
|        | 23   | Solar Ponds Plume                                | 2403                | <1                 | 14                    | 14                 | 2417                 | 7         | 2               | 1  | 0.5                              | 7                    | Yes            | Plume  |
|        | 24   | 160 Rad Site Bldg 664 Parking Lot                | 578                 | n                  | 1                     | 1                  | 579                  | 6         | 1               | 1  | 1                                | 6                    | Yes            | Compliance, presumptive remedy for closure   |
|        | 25   | 114-Present Landfill (includes IHSS 203)         | 415                 | <1                 | 31                    | 31                 | 446                  | 5         | 2               | 1  | 0.5                              | 5                    | NO             | IHSS 10E-4 to 10-6 Remedial Action required due to physical hazard   |
|        | 26   | Present Landfill Area Plume                      | 415                 | <1                 | 31                    | 31                 | 446                  | 5         | 2               | 1  | 0.5                              | 5                    | NO             | Plume  |
|        | 27   | 158 Rad Site - B55/1B554                         | 418                 | n                  | 1                     | 1                  | 419                  | 5         | 1               | 1  | 1                                | 5                    | NO             | Source may be due to LROC at B081  |
|        | 28   | Building 881 Area Plume                          | 257                 | n                  | 2                     | 2                  | 263                  | 5         | 1               | 1  | 1                                | 5                    | NO             | Tank burned and stabilized tank not breached   |
| IAC-96 | 29   | 129 Tank T-4 outside steam plant                 | <1                  | n                  | 2                     | 2                  | 2                    | 2         | 1               | 3  | 1                                | 3                    | NO             |  |
|        | 30   | 121 126 1 126 2 Tank T-8                         | <1                  | n                  | <1                    | <1                 | 0                    | 1         | 1               | 3  | 1                                | 3                    | NO             |  |
|        | 31   | Old Landfill Area Plume                          | 174                 | n                  | 64                    | 64                 | 174                  | 4         | 1               | 1  | 0.5                              | 2                    | NO             | IHSS 10E-4 to 10-6 Remedial Action required due to physical hazard   |
|        | 32   | Building 779 UBC                                 | n                   | n                  | 59                    | 59                 | 64                   | 2         | 1               | 1  | 1                                | 2                    | NO             | Continuation due to B779   |
|        | 33   | 121 Tank T 27                                    | n                   | n                  | 59                    | 59                 | 64                   | 2         | 1               | 1  | 1                                | 2                    | NO             | PAHs in surface soil   |
|        | 34   | 143 771 Outfall                                  | 46                  | <1                 | 3                     | 3                  | 49                   | 2         | 1               | 1  | 1                                | 2                    | NO             | Metal in GW  |
|        | 35   | 172 Central Avenue Waste Spill                   | 28                  | n                  | 18                    | 18                 | 46                   | 2         | 1               | 1  | 1                                | 2                    | NO             |  |
|        | 36   | 176 S&W Yard                                     | n                   | n                  | 26                    | 26                 | 26                   | 2         | 1               | 1  | 1                                | 2                    | NO             |  |
|        | 37   | 131 Rad Site #1 700 Area                         | n                   | n                  | 4                     | 4                  | 4                    | 1         | 1               | 2  | 1                                | 2                    | NO             |  |
|        | 38   | 120 1 North Fiberglassing area                   | n                   | n                  | 20                    | 20                 | 20                   | 1         | 1               | 1  | 1                                | 1                    | NO             | Continuation probably from 400 Complex   |
|        | 39   | 150 3 Rad Site Between B771 & B774               | n                   | n                  | 16                    | 16                 | 16                   | 1         | 1               | 1  | 1                                | 1                    | NO             |  |

n = data not available



ER Ranking

| Status | Rank | IHSS Number and Name                       | Total Tank Contents | Total Ground Water | Total Subsurface Soil | Total Surface Soil | Total Chemical Score | ALF Score | SW Impact Score Multiplier | Potential for Further Release Multiplier | Professional Judgment Multiplier | Total Priority Score | Exceeds Tier 1 | General Comments                      |
|--------|------|--|---------------------|--------------------|-----------------------|--------------------|----------------------|-----------|----------------------------|--|----------------------------------|----------------------|----------------|---------------------------------------|
|        | INV  | 150 7 Rad Site S of 778                    | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Rad Screens only                      |
|        | INV  | 151 Fuel Oil Leak                          | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | HPCe Survey                           |
|        | INV  | 163 2 Ammonium Slab                        | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Active Storage Unit, not sampled      |
|        | INV  | 210 Bldg 980 Cargo Container               | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                |                                       |
|        | INV  | 213 904 Pad, Pondcrete Storage             | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                |                                       |
|        | INV  | 116 1 Bldg 447 W Loading Dock              | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                |                                       |
|        | INV  | 116 2 Bldg 444 S Loading Dock              | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                |                                       |
|        | INV  | 136 1 Cooling Tower Pond W of 444          | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                |                                       |
|        | INV  | 148 Waste Leaks                            | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                |                                       |
|        | INV  | 150 8 Rad Site S of 779                    | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                |                                       |
|        | INV  | 164 1 Rad Site #2 800 Area                 | 2                   | n                  | n                     | <1                 | 2                    | 1         | 1                          | 1  | 0.5                              | 0                    |                | Spills cleaned up at time             |
|        | INV  | 173 Rad Site Bldg 991                      | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | Spills cleaned up at time             |
|        | INV  | 184 Rad Site 991 Steam                     | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | Unconfirmed-no location found         |
|        | INV  | 162 700 Area                               | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | Spills cleaned up at time             |
|        | LOW  | Bunking 881 UBC                            | 257                 | 7                  | n                     | n                  | 264                  | 5         | 1                          | 1  | 1                                | 5                    | YES            | No pathway known                      |
|        | LOW  | 111 B Trench T 11                          | 96                  | <1                 | <1                    | <1                 | 96                   | 3         | 1                          | 1  | 1                                | 3                    | NO             | Organics in groundwater               |
|        | LOW  | 190 Caulstic Leak                          | 12                  | n                  | <1                    | 12                 | 3                    | 3         | 1                          | 1  | 1                                | 3                    | NO             | Evaluate using approved MANFA process |
|        | LOW  | 177-OU 10                                  | <1                  | n                  | 2                     | 2                  | 1                    | 1         | 1                          | 1  | 1                                | 1                    | NO             | PCB IN above AL                       |
|        | LOW  | 118 2 Solvent Spills North End of Bldg 707 | <1                  | n                  | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    | NO             | Evaluate using approved MANFA process |
|        | LOW  | 188 Acid Leak Southeast of Bldg 374        | n                   | n                  | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 121-PO8 OPML Pipeline 135 R. Bldg 881      | n                   | n                  | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 121-F57 OPML Pipeline 112 R. Bldg 122      | n                   | n                  | n                     | n                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 121 T12 Invalid tank location              | n                   | n                  | n                     | n                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 121 T31 Invalid tank location              | n                   | n                  | n                     | n                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 121 T33 Invalid tank location              | n                   | n                  | n                     | n                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 121 T34 Invalid tank location              | n                   | n                  | n                     | n                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 121 T35 Invalid tank location              | n                   | n                  | n                     | n                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 175 S&W B 980 Container Storage Facility   | n                   | n                  | n                     | n                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 181 Building 334 Cargo Container Area      | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 182 444/453 Drum Storage Area              | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 205 Sump #3 Acid Site SE B460              | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    | NO             | Evaluate using approved MANFA process |
|        | LOW  | 206 Inactive D-386 HW Tank B374            | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 207 Inactive B444 Acid Dumpsters           | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 208 Inactive 444/447 Waste Storage         | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 147 2 Bldg 881 Conversion Activity         | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 187 Sulfuric Acid Spill, B443              | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 117 3 S Chemical Storage Site              | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 169 Hydrogen Peroxide Spill                | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 191 Hydrogen Peroxide Leak                 | n                   | n                  | n                     | n                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |
|        | LOW  | 134(N) Lithium Metal Destruction Site      | <1                  | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate by MANFA process/le B335 D4D |
|        | LOW  | 134(S) Lithium Metal Destruction Site      | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate by MANFA process/le B335 D4D |
|        | LOW  | 156 1 Radioactive Site                     | n                   | n                  | n                     | <1                 | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate using approved MANFA process |

n = data not available

ER Ranking

Rev 9/96

| Status | Rank | UHSS Number and Name             | Total Tank Contents | Total Ground Water | Total Subsurface Soil | Total Surface Soil | Total Chemical Score | ALF Score | SW Impact Score Multiplier | Potential for Further Release Multiplier | Professional Judgment Multiplier | Total Priority Score | Exceeds Tier 1 | General Comments                               |
|--------|------|----------------------------------|---------------------|--------------------|-----------------------|--------------------|----------------------|-----------|----------------------------|--|----------------------------------|----------------------|----------------|--|
|        |      |                                  |                     |                    |                       |                    |                      |           |                            |  |                                  |                      |                |  |
|        | LOW  | 150.6 Loading Dock               | n                   | n                  | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | Evaluate with MANFAPCB Hot Spot only           |
|        | LOW  | 216.2 East Spray Field OU 2      | n*                  | n                  | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | PPRG ratio less than 1 % downgradient wells    |
|        | LOW  | 216.3 East Spray Field OU 2      | n*                  | n                  | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 1                                | 0                    |                | PPRG ratio less than 1 % downgradient wells    |
|        | LOW  | 154 Pallet Burn Site             | n                   | n                  | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | Removed during PA construction, verify only    |
|        | LOW  | 111.2 Trench T 5                 | <1                  | <1                 | 1                     | 1                  | 1                    | 1         | 1                          | 1  | 0.5                              | 0.5                  | NO             |  |
|        | LOW  | 192 Pipeline                     | 3                   | n                  | n                     | 3                  | 1                    | 1         | 1                          | 1  | 0.5                              | 0.5                  | NO             | IFA-Causative Spill                            |
|        | LOW  | 104 Liquid Dumping               | <1                  | 10                 | <1                    | 10                 | 4                    | 4         | 2                          | 1  | 0.5                              | 4                    | Yes            | HFRA, less than 10-6                           |
|        | LOW  | 115 Original Landfill            | 172                 | <1                 | 27                    | 189                | 4                    | 4         | 1                          | 1  | 0.5                              | 2                    | Yes            | HFRA, 10E-4 to 10-6                            |
|        | LOW  | 130 800 Area Red Site #1         | <1                  | 34                 | <1                    | 34                 | 2                    | 2         | 2                          | 1  | 0.5                              | 2                    | Yes            | HFRA, less than 10-6                           |
| C-98   | LOW  | 166 West Spray Field             | 190                 | <1                 | <1                    | 190                | 4                    | 4         | 1                          | 1  | 0.5                              | 2                    | NO             | Passed CDPIE screen-CADRIOD complete           |
|        | LOW  | 133.4 Ash Pt #4                  | 44                  | <1                 | 2                     | 46                 | 2                    | 2         | 1                          | 1  | 0.5                              | 1                    | NO             | HFRA, 10E-4 to 10-6                            |
|        | LOW  | 196 in Old Landfill              | 44                  | <1                 | <1                    | 44                 | 2                    | 2         | 1                          | 1  | 0.5                              | 1                    | NO             | HFRA, 10E-4 to 10-6                            |
|        | LOW  | 133.1 Ash Pt #1                  | 44                  | 2                  | <1                    | 46                 | 2                    | 2         | 1                          | 1  | 0.5                              | 1                    | NO             | HFRA, 10E-4 to 10-6                            |
|        | LOW  | 133.2 Ash Pt #2                  | 44                  | 2                  | <1                    | 46                 | 2                    | 2         | 1                          | 1  | 0.5                              | 1                    | NO             | HFRA, 10E-4 to 10-6                            |
|        | LOW  | 133.3 Ash Pt #3                  | 44                  | <1                 | <1                    | 44                 | 2                    | 2         | 1                          | 1  | 0.5                              | 1                    | NO             | HFRA, 10E-4 to 10-6                            |
|        | LOW  | 119.2 Solvent Spill Site         | 9                   | <1                 | <1                    | 9                  | 1                    | 1         | 2                          | 1  | 0.5                              | 1                    | NO             | HFRA, less than 10-6                           |
|        | LOW  | 133.5 Incinerator                | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6                            |
|        | LOW  | 133.6 Concrete Wash Pad          | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6                            |
|        | LOW  | 142.1 Pond A 1                   | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6                            |
|        | LOW  | 142.2 Pond A 2                   | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6 w/pond data                |
|        | LOW  | 142.3 Pond A-3                   | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6 w/pond data                |
|        | LOW  | 142.5 Pond B-1                   | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6 w/pond & sediment data     |
|        | LOW  | 142.6 Pond B-2                   | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6 w/pond & sediment data     |
|        | LOW  | 142.7 Pond B-3                   | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6 w/pond & sediment data     |
|        | LOW  | 142.8 Pond B-4                   | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6 w/pond & sediment data     |
|        | LOW  | 188 Offsite Land Surface         | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6                            |
|        | LOW  | 200 Great Western Reservoir      | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6 No groundwater issues      |
|        | LOW  | 167.2 Landfill Pond Spray Area   | <1                  | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6 plus sediment samples      |
|        | LOW  | 167.3 Landfill South Spray Area  | n                   | <1                 | <1                    | 0                  | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, 10E-4 to 10-6                            |
|        | LOW  | 102 Oil Sludge Pt                | <1                  | <1                 | <1                    | <1                 | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | Focused HFRA, 10E-4 to 10-6                    |
|        | LOW  | 103 Chemical Bural               | <1                  | <1                 | <1                    | <1                 | 0                    | 0         | 2                          | 1  | 0.5                              | 0                    |                | HFRA, less than 10-6                           |
|        | LOW  | 105.1 W Out-of-Service Fuel Tank | <1                  | <1                 | <1                    | <1                 | 0                    | 0         | 2                          | 1  | 0.5                              | 0                    |                | HFRA, less than 10-6                           |
|        | LOW  | 105.2 E Out-of-Service Fuel Tank | <1                  | <1                 | <1                    | <1                 | 0                    | 0         | 2                          | 1  | 0.5                              | 0                    |                | HFRA, less than 10-6                           |
|        | LOW  | 106 Outfall                      | <1                  | <1                 | <1                    | <1                 | 0                    | 0         | 2                          | 1  | 0.5                              | 0                    |                | HFRA, less than 10-6                           |
|        | LOW  | 107 Hillside Oil Leak            | <1                  | <1                 | <1                    | <1                 | 0                    | 0         | 2                          | 1  | 0.5                              | 0                    |                | HFRA, less than 10-6                           |
|        | LOW  | 145 Sanitary Waste Line Leak     | <1                  | <1                 | <1                    | <1                 | 0                    | 0         | 2                          | 1  | 0.5                              | 0                    |                | HFRA, less than 10-6                           |
|        | LOW  | 142.10 Pond C-1                  | n                   | <1                 | <1                    | <1                 | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, less than 10-6                           |
|        | LOW  | 142.11 Pond C-2                  | n                   | <1                 | <1                    | <1                 | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, less than 10-6 Includes pond & sediments |
|        | LOW  | 167.1 N Landfill Spray Area      | <1                  | <1                 | <1                    | <1                 | 0                    | 0         | 1                          | 1  | 0.5                              | 0                    |                | HFRA, less than 10-6 Includes pond & sediments |
|        | LOW  | 165 Triangle Area                | 215                 | <1                 | 14                    | 229                | 4                    | 4         | 2                          | 1  | 0.5                              | 4                    | Yes            | HFRA, less than 10-6                           |
|        | LOW  | 141 Sludge Dispersal Area        | <1                  | n                  | <1                    | 0                  | 0                    | 0         | 2                          | 1  | 0.5                              | 0                    |                | HFRA, less than 10-6                           |

n = data not available

ER Ranking

| Status | Rank                             | IRIS Number and Name              | Total Rank Contents | Total Ground Water | Total Subsurface Soil | Total Surface Soil | ALF Score | SW Impact Score Multiplier | Potential for Further Release Multiplier | Professional Judgment Multiplier | Total Priority Score | Exceeds Tier 1 | General Comments                               |
|--------|----------------------------------|-----------------------------------|---------------------|--------------------|-----------------------|--------------------|-----------|----------------------------|--|----------------------------------|----------------------|----------------|--|
|        | LOW                              | 196.2 Soil Disposal Area          | <1                  | <1                 | <1                    | <1                 | 0         | 1                          | 1  | 0.5                              | 0                    |                | HRA less than 10-4                             |
|        | LOW                              | 201 Standley Lake                 | <1                  | <1                 | <1                    | <1                 | 0         | 1                          | 1  | 0.5                              | 0                    |                | Passed GDPHE screen                            |
|        | LOW                              | 202 Mower Reservoir               | <1                  | <1                 | <1                    | <1                 | 0         | 1                          | 1  | 0.5                              | 0                    |                | Passed GDPHE screen                            |
|        | LOW                              | 209 Surface Disturbances          | <1                  | <1                 | <1                    | <1                 | 0         | 1                          | 1  | 0.5                              | 0                    |                | Passed GDPHE screen                            |
|        | LOW                              | 166.1 Landfill Trench A           | <1                  | <1                 | n                     | n                  | 0         | 1                          | 1  | 0.5                              | 0                    |                | Passed GDPHE screen                            |
|        | LOW                              | 166.2 Landfill Trench B           | <1                  | <1                 | n                     | n                  | 0         | 1                          | 1  | 0.5                              | 0                    |                | Passed GDPHE screen                            |
|        | LOW                              | 166.3 Landfill Trench C           | <1                  | <1                 | n                     | n                  | 0         | 1                          | 1  | 0.5                              | 0                    |                | Passed GDPHE screen                            |
|        | LOW                              | F167.3 Former S Spray Field       | <1                  | <1                 | <1                    | <1                 | 0         | 1                          | 1  | 0.5                              | 0                    |                | Passed GDPHE screen for pond and sediment data |
|        | LOW                              | 142.4 Pond A-4                    | <1                  | <1                 | <1                    | <1                 | 0         | 1                          | 1  | 0.5                              | 0                    |                | Passed GDPHE screen for pond and sediment data |
|        | LOW                              | 142.9 Pond B-5                    | <1                  | <1                 | <1                    | <1                 | 0         | 1                          | 1  | 0.5                              | 0                    |                | Passed GDPHE screen                            |
|        | LOW                              | 142.12 Walnut and Indiana Pond    | <1                  | <1                 | <1                    | <1                 | 0         | 1                          | 1  | 0.5                              | 0                    |                | Passed GDPHE screen                            |
| C-06   | LOW                              | 179 B865 Drum Storage Rm 145      | n                   | n                  | n                     | n                  | 0         | 1                          | 1  | 0.5                              | 0                    |                | RCRA Clean Closure CADRRD complete             |
| C-06   | LOW                              | 190 B883 Drum Storage Rm 104      | n                   | n                  | n                     | n                  | 0         | 1                          | 1  | 0.5                              | 0                    |                | RCRA Clean Closure CADRRD complete             |
| C-06   | LOW                              | 204 Original Uranium Chip Roaster | n                   | n                  | n                     | n                  | 0         | 1                          | 1  | 0.5                              | 0                    |                | RCRA Clean Closure CADRRD complete             |
| C-06   | LOW                              | 178 B881 Drum Storage Rm. 165     | n                   | n                  | n                     | n                  | 0         | 1                          | 1  | 0.5                              | 0                    |                | No source found-CADRRD complete                |
| C-06   | LOW                              | 211 B881 Drum Storage #26-R211    | n                   | n                  | n                     | n                  | 0         | 1                          | 1  | 0.5                              | 0                    |                | No source found-CADRRD complete                |
| C-06   | LOW                              | 217 B881 Cyanide Treatment - #32  | n                   | n                  | n                     | n                  | 0         | 1                          | 1  | 0.5                              | 0                    |                | No source found-CADRRD Complete                |
| C-06   | Remediation complete in 1996     |                                   |                     |                    |                       |                    |           |                            |  |                                  |                      |                |  |
| IAC-06 | Initiate Action Complete in 1996 |                                   |                     |                    |                       |                    |           |                            |  |                                  |                      |                |  |
| INV    | Needs further investigation      |                                   |                     |                    |                       |                    |           |                            |  |                                  |                      |                |  |
| LOW    | Low priority                     |                                   |                     |                    |                       |                    |           |                            |  |                                  |                      |                |  |